

# Chapter 1: Public Health Is Essential

No one who knows what a public health system does would want to live in a community without one. The public health system — local, state, and federal agencies and their private partners — works around the clock to protect communities from harmful conditions and promote healthy behaviors. Through a broad range of critical activities, from fighting epidemics to safeguarding drinking water, the public health system reduces disease and injury as well as the health care costs associated with them.

We can thank improved public health practices for most of the 30-year gain in average life expectancy the United States has achieved in

this century. In communities throughout Washington and the nation, we have local and state health departments to thank when a measles outbreak is averted, when a dangerously polluted drinking water source is identified and corrected, and when food is handled and prepared safely.

Public health protection is a basic government responsibility. In contrast to medical care, which helps one individual at a time, public health helps entire communities. This “population-based” approach reaches large groups of people by preventing health problems. While both population-based prevention and individual care are essential parts of the health care system, ef-

fective public health prevention programs can reduce health care costs.

To keep people healthy, public health agencies carry out **prevention** — of injury, illness, and disability — by efforts such as encouraging people to use bicycle helmets or to stop smoking, and providing services that help young families get a healthy start in life with good nutrition. Another key practice is **protection** from health threats. Making vaccines available, responding to disease outbreaks, and requiring sanitation measures are examples of public health protection. Public health agencies also conduct **surveillance** to learn how diseases and other health problems occur so they can be prevented.

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## What Does Public Health DO?

These are some typical areas where public health agencies provide services. Local, state, and federal agencies...

- provide and promote immunizations
- provide and promote good nutrition
- provide maternal and infant care
- provide family planning programs
- protect food safety
- protect shellfish beds
- protect drinking water quality
- prevent infectious diseases

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## How the Public Health System Works

A united effort by public agencies, private organizations, and professionals, operating on the local, state, and federal levels makes the public health system work.

At the **local** level, 34 independent local health jurisdictions have primary responsibility for keeping communities healthy. Each has its own Board of Health; nearly all Board of Health members are elected officials who give their time to local public health issues. In addition, 27 federally recognized American Indian tribes have authority to maintain public health systems. The work of the local jurisdictions includes providing services to individuals and families, community-wide health promotion, control of diseases, regulatory activities to protect the public, data collection, and community-level planning.

Also working primarily at the local level are public health's **community partners**, who are playing increasingly important roles in pro-

moting healthy behavior and in providing individual treatment. In recent years, public health agencies have sought to reduce the amount of individual clinical service they provide to make up for gaps in the health care system. The goal is to have people receive comprehensive medical care from other providers and to direct public health resources toward prevention efforts in the community.

At the **state** level, the Washington State Department of Health administers funds for health programs provided by Congress and the Legislature, develops and oversees health policy, collects and shares health

information, enforces environmental regulations, and regulates health care providers and facilities. The Department supports community-level efforts with funding, consultation, and technical assistance. It works closely with other state agencies and the State Board of Health.

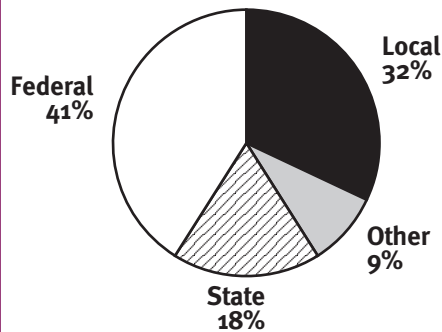
At the **federal** level is the U.S. Department of Health and Human Services, including the National Institutes of Health and the U.S. Centers for Disease Control and Prevention (CDC). These and other agencies develop policy, set standards, administer funds appropriated by Congress, conduct research, and provide technical assistance.

### The Public Health System



All parts of the public health system must work together to protect and improve health.

### Government Investment in Public Health



This chart shows funding sources for state and local health departments in Washington State. The combined government expenses of the public health system in 1997 were about \$434 million. Local government contributions and fees make up nearly a third of all funding. Federal contributions include grants for categorical programs and reimbursement for clinical services. State funds from the Department of Health and other agencies support a broad range of public health activities. Other sources are primarily state fees that support state-administered programs, such as health facility and professional licensing.

(Source — FY 1998 DOH data, 1997 BARS)

To finance its activities, the public health system receives federal, state and local funding. The above chart shows how state and local public health agencies are funded. Congress and the Legislature earmark most public funds that go to communities for specific public health activities — commonly called categorical programs — such as immunizations and programs to protect drinking water.

Public health is essential, and it's a bargain. But it's often invisible. People cannot see the disease outbreaks, injuries, and early deaths that don't occur. And to perform

this essential yet invisible work, public health agencies need resources to maintain a constant state of readiness by monitoring threats to health, communicating critical information rapidly, and assessing and diagnosing problems. Often, the public overlooks the necessity to finance this critical public health "infrastructure."

Nationwide, population-based public health services amount to only about 1% of the trillion dollars spent annually for health care. But this small share is a remarkably cost-effective investment for health. Public health shifts resources from problems to prevention — "going

upstream" to get to the source of problems. By preventing the high costs to society that come with epidemics, polluted water systems, and other health risks, the public health system saves resources every year in health care and social costs.

When public health emergencies take place, the work of the public health system suddenly becomes visible. Over the next two pages, we show how the partners and resources of the entire public health system have worked together to address one type of emergency: outbreaks of E.coli 0157:H7.

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- prevent HIV/AIDS
- prevent injuries
- prevent violence
- prevent heart disease, cancer, and diabetes
- prevent toxics exposure
- prevent unintended pregnancies
- prevent tobacco use
- prevent diseases spread by animals
- prevent contamination from on-site sewage
- promote physical activity

This **is not** a complete list, because there isn't one. Threats to health emerge all the time, and the public health system must be ready to respond.

# Public Health in Action: E.coli 0157:H7 Outbreak at the Puyallup Fair

In the past decade, Washington has had three significant outbreaks of E.coli 0157:H7, a life-threatening bacterium that is particularly dangerous to children. In September 1998, a case was suspected of being linked to the Puyallup Fair, visited by more than a million people over two weeks. A team of epidemiologists, disease investigators, environmental health specialists, nurses, and public information staff took fast action — because every hour counts in fighting a communicable disease outbreak.



**Saturday,  
September 19  
8pm**

An infectious disease nurse at Tacoma's Mary Bridge Hospital calls the Department of Health's 24-hour disease reporting number and tells a state epidemiologist that a young child hospitalized with symptoms of bloody diarrhea has a confirmed case of E.coli 0157:H7. The nurse notes that the child attended the Puyallup Fair on September 13. The epidemiologist asks the Tacoma-Pierce County Health Department's infectious disease coordinator to contact local emergency rooms and hospital laboratories; her quick scan finds no other cases. The local

department's food safety program is alerted about the possibility of E.coli linked to the fair.



**Sunday,  
September 20  
10am**

As the gates of the fair open, local health department food safety inspectors are on hand to redouble efforts to make sure the hamburger and other food items are being properly handled and cooked. An epidemiologist from the Seattle-King County Department of Public Health interviews the sick child's parents and finds three possible sources of exposure: the petting zoo, a water ride, and a hamburger. Public health officials encourage fairgoers to use a handwashing station set up by the petting zoo.



**Monday,  
September 21  
8am**

The state epidemiologist gets word that a second child with suspected E.coli was seen the previous night at Providence St. Peter Hospital in Olympia. He arranges to have a bacteria sample delivered to the State Public Health Laboratory near Seattle. The second child's family reports that members attended the fair, visited the petting zoo, and ate hamburgers. The Department of Health's food safety manager asks the U.S. Department of Agriculture to coordinate an investigation of bacteria sources at the fair.



**Tuesday,  
September 22  
2am**

Overnight lab work confirms the second case as E.coli. The Public Health Laboratory runs a state-of-the-art procedure to identify the specific DNA "fingerprint" of the bacteria strain. If the two finger-

prints match, it will confirm that a common source is responsible. Local, state, and federal disease investigators comb the fairgrounds, taking animal, food, and water samples that are sent to the lab for bacteria culturing. By e-mail and fax, the state epidemiologist warns public health officials, health care providers, and news media across the state about a possible E.coli outbreak.



**Wednesday,  
September 23  
noon**

The DNA fingerprints of the two cases are an exact match. Medical providers report five other cases of E.coli-like symptoms. The search for the common source of the disease intensifies as the story gets nationwide news coverage.



**Thursday,  
September 24  
9am**

A third child hospitalized in Pierce County becomes ill with E.coli. Her family also went to the fair on September 13. Testing confirms this

case to be a close, but not an identical, DNA fingerprint match.



**Friday,  
September 25  
5pm**

Several other cases of E.coli-like illnesses are reported, but lab testing does not confirm any new cases. Samples are sent to the federal Centers for Disease Control laboratory in Atlanta for further analysis.



**Sunday,  
September 27  
10pm**

The Puyallup Fair closes for another year. Rapid response in identification of E.coli, combined with effective disease prevention measures put in place before the fair opened, averted what could have been a massive disease outbreak. Federal and state microbiologists continue to search for the bacteria source. The child with life-threatening symptoms is discharged after 29 days in the hospital.

## Learning from Experience

It was more than luck that restricted the 1998 outbreak of E.coli 0157: H7 to a few cases. Epidemiologists, disease investigators, and medical workers in our state have learned to fight the disease during three previous outbreaks.

In 1986, 37 cases of E.coli, mostly among adults, occurred in Walla Walla. The public had little awareness of the disease, which had been officially recognized only four years before. Public health investigators had limited capacity to identify the disease, but they later found fast-food taco meat to be the source.

In January 1993, during the nation's largest E.coli outbreak, public health officials identified more than 600 cases in Washington, resulting in the death of three children. Investigators found a regional chain of fast-food restaurants that served undercooked hamburger, and more than a quarter-million hamburger patties were destroyed.

In 1996, public health officials linked 70 cases in Washington, British Columbia, California, and Colorado to a brand of unpasteurized apple juice tainted with E.coli bacteria. Within nine days of identifying the first case, the source was found to be a juice that was later withdrawn from grocers' shelves. DNA fingerprinting, a brand-new laboratory technology, was instrumental in enabling Washington State to lead the way in stopping the outbreak.

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*With the Public Health Improvement Plan, Washington lawmakers directed the state's public health system to determine what capacity would be needed to protect the health of entire communities.*

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### **Redirecting Public Health Policy**

An influential report by the Institutes of Medicine in 1988, *The Future of Public Health*, pointed out a dangerous trend among the nation's public health agencies: They were focusing activities and resources on categorical programs and clinical services — while their basic infrastructure was eroding, and their primary mission of community-level disease prevention and health promotion was being neglected. The report predicted grave consequences if there were an epidemic or other major health threat to which the public health system could not respond.

In Washington, health policy makers recognized that many of the same issues undermined the state's public health system. Some of the most important public health needs and

opportunities in Washington were not being addressed, because resources were focused on very specific problems. Not enough attention was paid to how well the system worked as a whole.

Beginning in 1993, the Washington Legislature set direction and provided resources to begin modernizing and improving the state's public health system. With the Public Health Improvement Plan, Washington lawmakers directed the state's public health system to determine what capacity would be needed to protect the health of entire communities. They required a focus on the “core functions” of public health to ensure that the basic mission of the public health system would be met.

National leaders defined the core functions of public health — and the 10 essential services of a public health system — as follows:

### **Assessment**

- monitoring health status of the community
- diagnosing and investigating health problems and hazards
- informing and educating people about health issues

### **Policy Development**

- mobilizing partnerships to solve community problems
- supporting policies and plans to achieve health goals

### **Assurance**

- enforcing laws and regulations to protect health and safety
- linking people to needed personal health services
- ensuring a skilled public health workforce
- evaluating effectiveness, accessibility, and quality of health services
- researching and applying innovative solutions



Emphasis on the core functions has guided how Washington's public health agencies recognize health threats and how they work with public and private partners to respond to them.

The Legislature has provided state funds that do not carry categorical restrictions, recognizing that each community has urgent and unique public health needs. For the first time, communities can decide for themselves how best to use some of the state funds. Local agencies have used these funds to build needed infrastructure, support assessment activity, and expand programs in environmental health and personal health services.

The State Department of Health has used non-categorical funds to support local action and strengthen the public health system through en-

hanced communication, technical assistance programs, and modernized laboratory services. Many of the local public health achievements that we present in this report have been possible only because of the resources and flexibility provided through this approach.

Washington's efforts have brought about significant accomplishments at the state and local levels. We have begun a process of changing public health practice so that resources are used more efficiently, and local

communities can better meet their needs. Continued effort toward these goals is crucial in order to have the healthiest possible future.

### Looking Ahead

The next section outlines challenges facing the public health system today. Chapter 2 looks at how we are responding to these trends – our accomplishments to date and our plans for action at the state level. Chapter 3 looks at how local health jurisdictions are working toward public health improvement today and outlines specific challenges that face these communities.



## The Public Values Public Health

In a 1996 Harris poll, participants identified health practices that are “very important” to them.

- 93% identified “prevention of the spread of infectious diseases” such as tuberculosis, measles, AIDS, and the flu.
- 90% identified “immunizations to prevent diseases.”
- 82% identified “making sure people are not exposed to unsafe water supply, dangerous air pollution, or toxic waste.”
- 72% identified “encouraging people to live healthier lifestyles.”

When asked who should be “mainly responsible” for public health programs, 57% answered, “government.”

## Public Health Challenges

- Infectious diseases are emerging.
- A growing population imperils the environment and our health.
- Our aging population raises costly health issues.
- Our health habits must improve.
- Disparities in income are causing differences in health status.
- Our health care system is changing.
- More families need child care services.
- Schools now face complex health issues.
- Eroding resources jeopardize our public health infrastructure.



## Trends That Affect Our Health

In this section, we examine nine trends that will significantly affect how healthy we will be in the next few decades. Each represents a long-term challenge for the entire public health system. These trends will affect different communities in different ways, and we will need to pay attention to their effects at both the community and the state level.

### Infectious diseases are emerging.

This century has brought widespread use of antibiotics and cures

for many diseases, but it has become clear that the bacteria and viruses that cause disease are fighting back. In this era of swift travel, increased migration, and importation of food, any pathogen can be transported halfway around the world in less than a day. At the same time, widespread use of antibiotics has contributed to emergence of resistant strains of common diseases. Health care providers try to find effective therapies for diseases that have grown resistant to commonly used drugs. This involves both new treatments and restraint in using antibiotics when the body's own defenses will suffice.

Two examples of emerging infections are as follows:

**Hantavirus:** Hantavirus, which causes a respiratory disease that often kills people quickly, was first detected in the Southwest United States in 1993. Public health officials have tied the disease to rodents, and carriers are now found in all the western states. Of Washington's nine confirmed cases, six have been fatal.

**HIV:** The virus that causes AIDS spread through the past three decades, infecting more than 30 million people worldwide and at least 15,000 persons in Washington. Millions of public and private dollars are being spent in Washington State to find a cure, treat people who are infected, and educate people about how they can prevent infection.

Two examples of resistance are the following:



**Tuberculosis:** A century ago, TB was America's deadliest disease, responsible for one of every five deaths. Although effective drugs and massive TB control efforts proved successful, the organism continued to thrive in some parts of the world. As a result, there is growing world-wide concern about new, drug-resistant TB strains. In Washington, more than one of every eight tuberculosis cases is resistant to at least one TB drug.

**VRE:** A hospital that discovers it is housing "vancomycin-resistant enterococci" — medical shorthand for an organism that has grown resistant to the most powerful antibiotics in our drug arsenal — must immediately modify its services and may have difficulty transferring or treating patients. The number of confirmed cases of VRE resistance is growing.

To respond to the challenge of emerging infections, we must make sure health care providers have current information and that they are

linked through electronic information systems so that they can quickly consult with disease experts. They also need state-of-the-art laboratories. We need broad-scale public education about antibiotic use, as well as practices that control resistant disease strains.

**A growing population imperils the environment and health.**

Washington State's population — now more than 5.6 million — has doubled since 1959, and today's

population will grow by another third by 2020. More people means more pressure on our natural resources, such as the water, land, and clean air we need to be healthy.

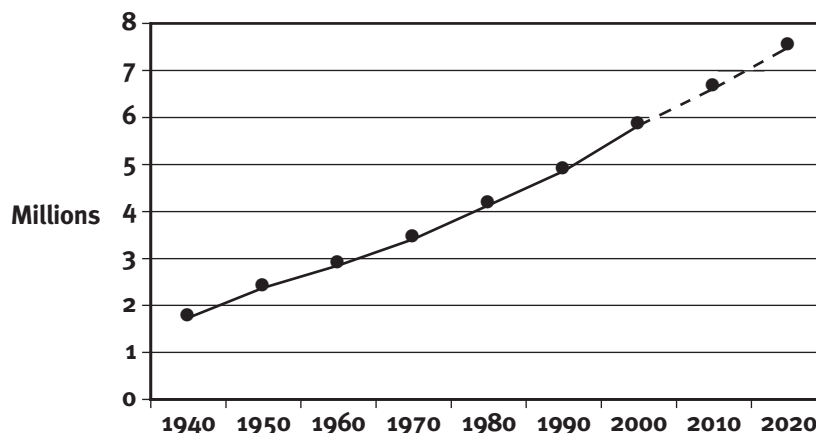
Maintaining an adequate supply of safe drinking water to serve this growing population is a daunting challenge to policy makers, water companies, and property owners. In much of Washington, we are accustomed to abundant water supplies for drinking, food preparation, agri-

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**Washington State Population, 1940-2020**



(Source — Washington State Office of Financial Management Forecasting Division)

*Half of our deaths are premature — linked to preventable illness from behavior and the environment.*

culture, and hydroelectric power. As we develop more land and tap into available water supplies, we expose more water to contamination or depletion. Also, restoring natural salmon runs will increase debate about how water supplies should be used.

Today more than 83% of Washington's residents depend on 16,000 public water systems, many of which are very small, for drinking and household use. The remainder depend on private wells. All of these water sources are at potential risk of contamination from pesticides and other chemicals, farming waste, failing septic tanks, and industrial byproducts. Keeping these water supplies clean and safe will require careful consideration of how we use the lands from which water is drawn and constant monitoring of water supplies.

Air quality is also of growing concern to public health officials. Despite the Northwest's reputation as a pristine environment, the impact of a growing population will be felt

in the air as we drive more cars, more densely populate our cities, burn more wood, and expand our industries. Both indoor and outdoor air pollution — from automobiles and building, industrial, or agricultural practices — can cause health problems. Scientists have already linked air pollution to chronic respiratory disease.

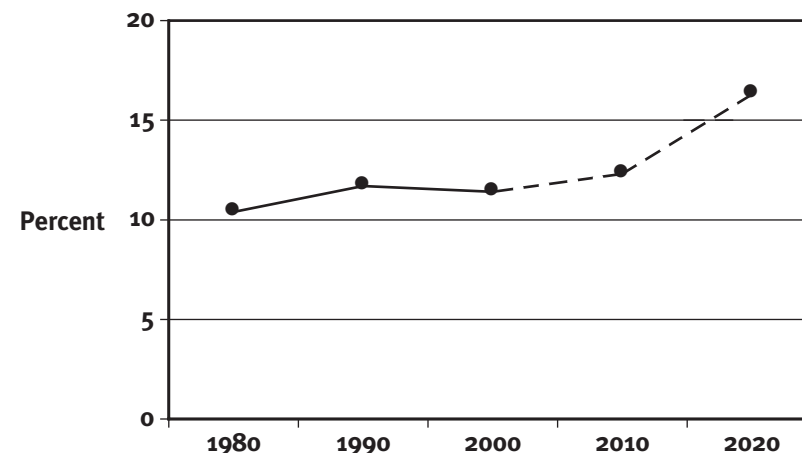
The most important need for coping with the tough choices presented by

population growth is to communicate reliable information to policy makers and the public. Good information about air and water quality depends on establishing strong monitoring systems, maintaining adequate laboratory and testing capacity, and communicating results clearly and broadly.

### **Our aging population raises costly health issues.**

About one of every nine Washingtonians was 65 years or older in 1997.

**Share of Population 65 and Older  
Washington State, 1980-2020**



(Source — Washington State Office of Financial Management Forecasting Division)

By 2020, more than one of every six will be 65 or older. Our aging population affects our health care system. Nationally, health care for the elderly accounts for 36% of the health care dollar, and this share is also growing. These costs are largely borne by younger workers through federal programs such as Medicare. As the demographic bulge of “baby boomers” ages, there will be proportionately fewer workers to subsidize medical care. It is in everyone’s interest to have an older population that is as healthy as possible.

### Our health habits need to improve.

The leading causes of premature death and morbidity are often listed as heart disease, cancer, cerebrovascular disease, and unintentional injuries. Public health experts focus on the underlying causes of these deaths, including tobacco use, improper diet, lack of physical activity, and alcohol misuse.

The greatest contributors to high medical costs for older adults are linked to lifestyle — smoking, poor

diet, and physical inactivity. Unhealthy habits gradually develop into medical problems, including cardiovascular disease, diabetes, osteoporosis and emphysema. Despite healthy images in the media, health behaviors of typical Americans have not changed enough to eliminate widespread smoking, obesity, and alcohol misuse. Americans are increasingly overweight and sedentary. Half of our deaths are premature — linked to preventable illness from behavior and the environment.

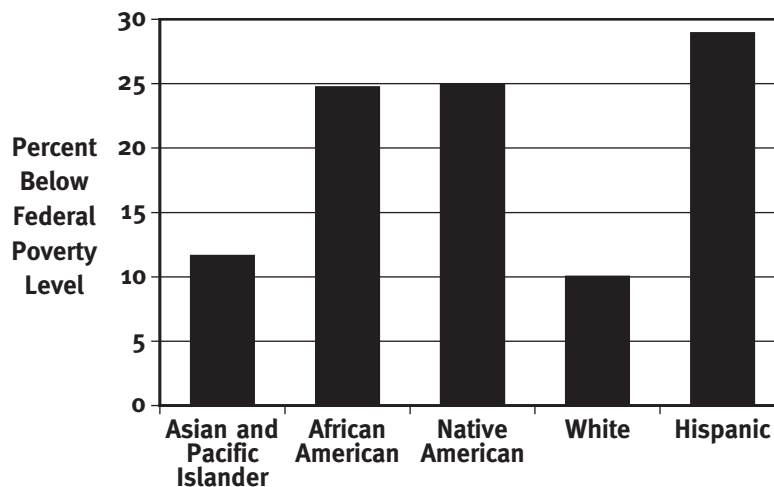
Prevention is the most important step in extending healthy, indepen-

dent life and reducing the high costs of health care predicted for the coming decades. Healthy behaviors should be learned early in life, and they should be reinforced by families, schools, the news media, the workplace, and health care providers.

### Disparities in income are causing differences in health status.

As our population grows, we are becoming more racially and ethnically diverse. Many of Washington’s communities have experienced

**Poverty by Race and Ethnicity  
Washington State, 1998**



(Source — Current Population Survey)

## Battles Against Tobacco

Tobacco is the leading cause of preventable death in the United States. Each year, more than 400,000 Americans, including 8,000 Washington residents, die from tobacco-related illness. Tobacco consumption costs Washington \$705 million annually in increased medical costs.

But public health agencies are winning battles against tobacco use. Since passage of the state’s 1993 Minors’ Access to Tobacco Act, youth are able to purchase cigarettes in only 15% of attempts, compared with 60% before the law. A National Cancer Institute survey shows that 65% of people work in smoke-free environments. In November 1998, Washington and 45 other states reached a preliminary settlement with the tobacco industry which provides funding for tobacco prevention and restrictions on advertising.

*Public health agencies face more complicated decisions than ever before about how they can best influence the health care system to improve and protect people's health.*



profound demographic changes over the past decade, including a rising share of residents born in other countries who speak a language other than English.

A disproportionate share of people of color are poor. From a public health perspective, income statistics are significant because of disparities in health status. Throughout history, people with higher incomes have been healthier for many reasons: better diet, better housing, more physical safety, and better access to health care and preventive services. Improving over-all health status means addressing the health disparities in health that exist within each community.

### **Our health care system is changing.**

Washington has made significant strides since 1990 in improving financial coverage of health care by expanding Medicaid, by subsidizing health insurance through the Basic Health Plan, and limiting the ability of health insurance plans to turn down applicants. But the health care market is changing rapidly. Because managed care and prepaid health insurance helped restrict increases in insurance premiums, they became the norm for both private and public health care purchasers.

Today, the insurance premiums are turning upward again. Several health

insurance plans have withdrawn from participation in publicly supported programs, citing insufficient revenues to cover costs. Public health officials are closely monitoring trends affecting access to care. Some local health jurisdictions remain clinical care “providers of last resort” for health services such as family planning and immunizations. Public health agencies face more complicated decisions than ever before about how they can best influence the health care system to improve and protect people’s health.

### **More families need child care services.**

Another sweeping social change in communities in Washington and across the nation is a growing need for child care. Today more children live in homes where a single parent or both parents must work to support a family, making child care

imperative. The 1996 federal welfare reform law, which put more single parents in the regular workforce, has increased the pressure for quality child care. Mounting scientific evidence shows that balanced nutrition and active stimulation are essential for children's full cognitive, physical, social, and emotional development. It will be important to develop the resources to assure that high quality, safe, and healthy child care environments are available to families who need them.

### **Schools now face complex health issues.**

Changes in families have made the time students spend in school an increasingly important part of their lives. Growing numbers of children with disabilities now attend regular public school programs. Throughout the state, thousands of children with special needs receive health services in school settings, sometimes from staff with inadequate training. In addition, schools daily address a range of public health issues, includ-

ing violence, indoor air quality, playground safety, and staffing of school health clinics. Public health must work in partnership with schools to provide healthy environments where students can learn and teachers can teach.

### **Eroding infrastructure jeopardizes our public health.**

Urgent public health issues do not come one at a time, in logical order. They pop up quickly, often simultaneously, and demand expert handling by physicians, epidemiologists, health educators, health policy makers, and others. Their professional skills are part of the "infrastructure" of public health.

In 1995, the Washington Legislature asked that public health agencies develop performance standards to assure that citizens in every community can be confident that their local health departments are fully prepared and equipped to protect health. All public health jurisdictions must be able to do the following:

- identify health problems and threats
- control disease outbreaks
- prevent environmental risks to health
- promote healthier lives through services, education, and policies
- assure that needed health services are available and safe

Paying attention to the system as a whole is key to maintaining strong public health protection. But Washington's public health system has been jeopardized by fragmentation as it has tried to plug the gaps in health services delivery and cope with funding pressure that stems from other governmental needs, such as growth management and criminal justice.

As we show in the following chapters of this report, Washington's public health system has made progress in solving these problems. But significant work must be accomplished in the years ahead.

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